

REMARKS

Claims 1-19 are pending in this application. Claims 1, 9, 13 and 17-19 are independent claims. By this amendment, claims 1, 9 and 13 are amended and new claims 17-19 are added. Reconsideration in view of the above amendments and following remarks is respectfully solicited.

I. THE CLAIMS DEFINE PATENTABLE SUBJECT MATTER

The Office Action rejects: **(1)** claims 1, 5, 6 and 13-15 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,018,588 to Kim (hereafter Kim); **(2)** claims 9 and 10 under 35 U.S.C. §103(a) as being unpatentable over Kim; **(3)** claims 2-4, 7 and 11 under 35 U.S.C. §103(a) as being unpatentable over Kim in view of U.S. Patent No. 5,335,075 to Komiya et al. (hereafter Komiya); and **(4)** claims 8, 12 and 16 under 35 U.S.C. §103(a) as being unpatentable over Kim in view of U.S. Patent No. 6,256,419 to Nagasaka et al. (hereafter Nagasaka).

These rejection are respectfully traversed.

Applicants respectfully submit that Kim, either alone or in combination with Komiya or Nagasaka, fails to teach or suggest each and every feature as set forth in the claimed invention. In particular, the cited references at least fails to teach or suggest making an adjustment to brightness based on the number of pixels having the maximum brightness, as set forth in independent claims 1, 9 and 13.

Independent claims 1, 9 and 13 recite, *inter alia*, expressing a pixel value of each pixel in the image data as a set of three mutually independent components. The brightness of each pixel is defined based on the three components. A rate of pixels is determined based on a number of pixels having a maximum brightness

among all pixels. An adjustment to the acquisition device or exposure value or image data is made based on the determined rate.

The brightness adjustment method/apparatus of the present invention is capable of adjusting brightness, not based on a mean value but based on the number (frequency) of pixels having the maximum brightness. In other words, regarding the brightness of the image, the brightness is determined by the frequency of a highlighted portion rather than by the mean value of the entire image. As such, the rate of pixels having the maximum brightness among all pixels is made a predetermined ratio.

In contrast, Kim discloses that a luminance extractor 100 extracts a luminance signal Y from input signals R, G, and B. A mean matching histogram equalizer 200 histogram-equalizes the luminance signal Y extracted by the luminance extractor 100 using a cumulative density function of the extracted luminance signal Y as a transform function, and outputs an adjusted luminance signal Y' by controlling the transform function to map a mean level of the extracted luminance signal Y to itself. A color compensator 300 multiplies the ratio k between the luminance signal Y output by the luminance extractor 100 and the varied luminance signal Y' output by the mean matching histogram equalizer 200 with the respective input color signals R, G, and B, and outputs compensated color signals R', G' and B'. (see Kim, column 8, lines 43-57).

In other words, Kim merely discloses that image contrast is enhanced by controlling a transform function to map a *mean* level of the extracted luminance signal to itself, so that an adjusted luminance signal is output. Kim fails to teach or suggest generating a rate of pixels having a maximum brightness among all pixels and using this rate to make adjustments, as set forth in the claimed invention. Kim only defines brightness on the basis of

luminance and as a mean value of R, G, and B. Kim fails to teach or suggest using a maximum value among the R, G, and B values to be brightness, as set forth in the claimed invention. As such, the cited correction value calculated by Kim fails to take into consideration a rate of pixels having a maximum brightness. In fact, the Examiner concedes in paragraph 14 of the Office Action that Kim assumes that only the green component will always represent the brightness. As such, Kim can not suggest that the rate of pixels having the maximum brightness among all pixels is made a predetermined ratio for making adjustments.

According to MPEP §2131, "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. Of California*, 814 F.2d 628, 631, 2 USPQ2d 1051 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ...claims." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913 (Fed. Cir. 1989). The elements must be arranged as required by the claims, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Applicants respectfully submit that the Office Action has failed to establish the required *prima facie* case of anticipation because the cited reference, Kim, fails to teach or suggest each and every feature as set forth in the claimed invention.

Additionally, applicants note that, in order to anticipate a "means-plus-function" clause as recited in independent claims 9 and 13, a reference must disclose a function identical to the recited function.

Applicant respectfully submits that the Office Action is

merely using portions of the claimed functions and is attempting to find the same function in the cited reference. However, the entire identical function must be disclosed.

Not only does Kim fail to teach or suggest using the maximum value among the R, G, and B values, but, as noted above, the Office Action itself concedes that Kim's method assumes that the green component will always represent the brightness. (see Office Action, paragraph 14). In an attempt to show this feature, the Office Action imports Nagasaka. However, applicant respectfully submits that Nagasaka fails to make up for the deficiencies found in Kim.

Nagasaka merely discloses a method for generating an average brightness level B_n for each pixel in a frame F_n . For example, Nagasaka notes that a maximum value of each RGB component can be used as the luminance value although they ultimately use the value of the green component as the brightness level. This green component brightness level (not the maximum values of each RGB) is added to the B_n value (average brightness) to obtain the ultimate average luminance B_n of the entire frame. This ultimate average brightness B_n value is then used to help detect a point of change in a moving image (not for making adjustments to image data brightness). In other words, like Kim, Nagasaka uses the green component for luminance. However, Nagasaka is aimed at solving a totally different problem than Kim because Nagasaka is not concerned with enhancing brightness.

In contrast to Nagasaka, the claimed invention uses the rate of pixels having the maximum brightness to make adjustments to an image acquisition device or an exposure value and/or a pixel value.

Nagasaka fails teach or suggest using a maximum value of each RGB component for such adjustments. In fact, Nagasaka is not at all concerned with brightness adjustments. Nagasaka merely notes that

a maximum values of each RGB component can be taken as luminance value without disclosing why or how such a maximum value can be implemented for brightness adjustments.

To establish a *prima facie* case of Obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP 706.02(j).

Applicant respectfully submits that only through impermissible hindsight reconstruction using applicant's invention would one find motivation to modify Kim's method with Nagasaka's maximum value to arrive at the claimed invention.

Applicant submits that the Office Action has improperly used applicant's invention as a road map to pick and choose features from different references (solving different problems) and pasting the chosen features together to arrive at the claimed invention, even though the reference does not provide any teachings, suggestion or motivation to make the modification. In fact Nagasaka would most likely lead one skilled in the art to use the green component, like Kim does, for luminance, not the maximum value of each RGB. Also, Komiya fails to make up for the deficiencies found in Kim and Nagasaka.

Applicant respectfully submits that independent claims 1, 9

and 13 are allowable over Kim, Nagasaka and Komiya for at least the reasons noted above.

As for each of the dependent claims not particularly discussed above, these claims are allowable for at least the reasons set forth above regarding their corresponding independent claims, and/or for the further features claimed therein.

Accordingly, withdrawal of the rejection of claims 1-16 under 35 U.S.C. §102(e) and §103(a) is respectfully solicited.

II. CONCLUSION

In view of the foregoing, Applicants respectfully submit that the application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact Carolyn T. Baumgardner (Reg. No. 41,345) at (703) 205-8000 **to schedule a Personal Interview.**

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant respectfully petitions for a two (3) month extension of time for filing a reply in connection with the present application. The required fee of \$930.00 is attached.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment from or credit any overpayment to Deposit Account No. 02-2448 for any additional

Docket No.: 2091-0162P

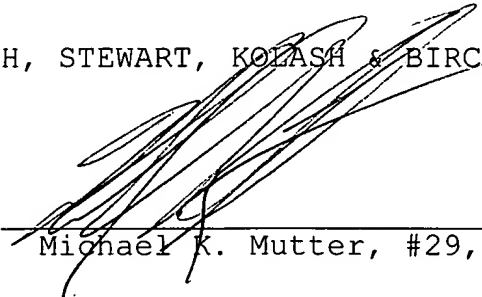
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fees required under 37 C.F.R. \$1.16 or under 37 C.F.R. \$1.17;
particularly, the extension of time fees.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made

VERSION WITH MARKINGS SHOWING CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Amended) A [a] method of adjusting the brightness of an image, the method comprising the steps of:

[wherein] acquiring image data [are acquired] by an image acquisition device[,];

[in said data] expressing a pixel value of each pixel in said image data [is expressed] as a set of three mutually independent components; [and]

defining the brightness of each pixel [being defined] based on said three components[,];

[said method comprising a step of making] determining a rate of pixels [having the] based on a number of pixels having a maximum brightness among all pixels [in said the definition to all pixels a predetermined rate by]; and

making an adjustment to said image acquisition device and/or said pixel value based on the rate.

9. (Amended) A digital camera comprising:

image pick-up means for photographing an image and acquiring image data in which a pixel value of each pixel is expressed as a set of three mutually independent components;

brightness analyzing means for computing a histogram of the brightness of said pixel defined based on said three components for said image data acquired by said image pick-up means; and

exposure control means for making an adjustment to an exposure value at the time of photographing on the basis of said

histogram so that a rate of pixels based on a number of pixels having a maximum brightness among all pixels [having the maximum brightness in the definition to all pixels] becomes a predetermined rate.

13. (Amended) An image processor comprising:

data acquisition means for acquiring an image as digital data in which a pixel value of each pixel is expressed as a set of three mutually independent components;

brightness analyzing means for computing a histogram of the brightness of said pixel defined based on said three components for said digital data acquired by said data acquisition means; and

data transformation means for performing a data transformation process on the acquired digital data on the basis of said histogram so that a rate of pixels based on a number of pixels having a maximum brightness among all pixels [having the maximum brightness in the definition to all pixels] is made a predetermined rate.

New claims 17-19 are added.